



2018 POKER FLAT  
**SOUNDING**  
**ROCKET**

CAMPAIN

Quick Look



# 2018 POKER FLAT **SOUNDING ROCKET** CAMPAIGN

● ● ● January 15 – 31, 2018

● ● ● Four launches from the Poker Flat Research Range in Alaska

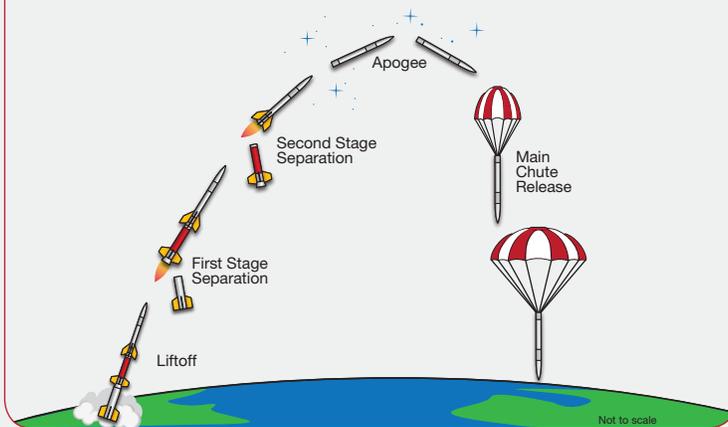
## **SOUNDING ROCKET** FAST FACTS

Known as sounding rockets for the nautical term “to sound,” meaning to measure, these rockets reach a region between 30 and 800 miles above the Earth’s surface.

- The lower end of this region is otherwise inaccessible, as it’s above the maximum altitude for scientific balloons and below the minimum for satellites.
- In many instances, sounding rockets offer the only means to study certain scientific phenomena, such as the dynamics and chemistry of the upper atmosphere.

The flight is a simple parabolic trajectory and flight time is less than 20 minutes—providing just 5 to 10 solid minutes of scientific observations from space.

- The rocket consumes its fuel on the rising part of the flight, then separates and falls away, leaving the payload to complete the arc and re-enter the atmosphere. Often, it floats gently down to Earth by way of a parachute and is then retrieved.
- By recovering parts of the payload, it can be refurbished and flown again, resulting in tremendous savings.



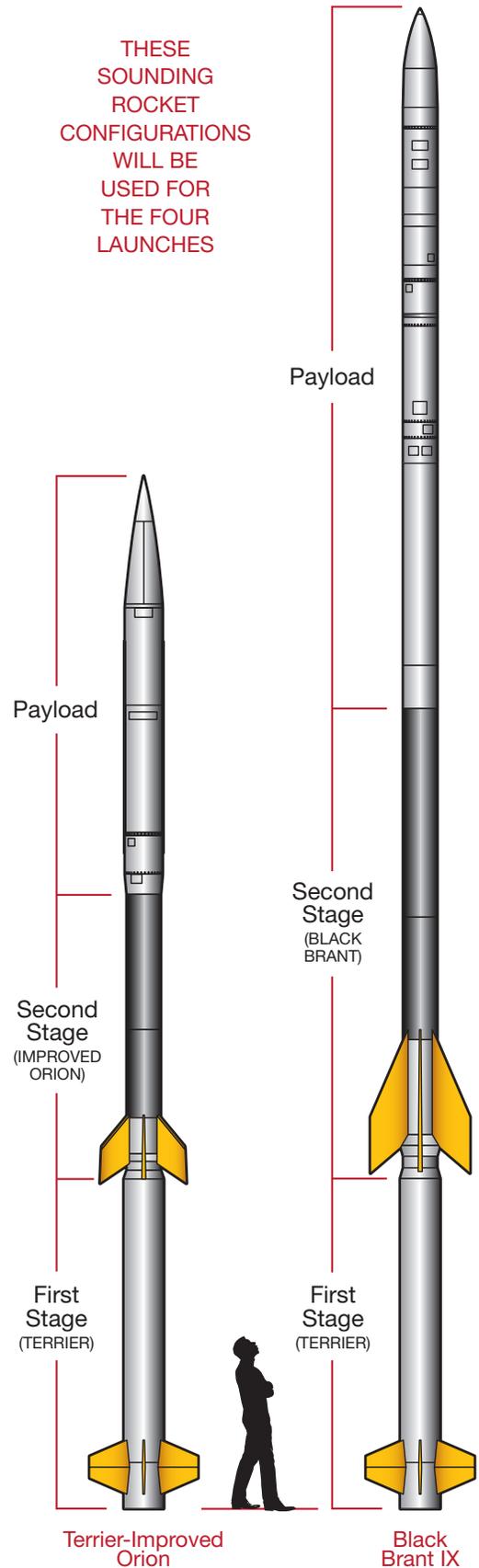
Because sounding rockets are relatively low cost, they become perfect vehicles for testing new instrument ideas while conducting cutting-edge science.

- NASA’s sounding rocket program at Wallops dates back to the agency’s inception in 1958.
- Engineers and scientists work hand in hand at Wallops to bring innovative, creative ideas to life with a quick turnaround time. Sounding rockets can then be launched from various places around the globe—the mobile nature of the program enables researchers to conduct missions from strategic vantage points worldwide.

The launches from the Poker Flat Research Range in Alaska are supported through NASA’s Sounding Rocket Program at the agency’s Wallops Flight Facility at Wallops Island, Virginia, which is managed by NASA’s Goddard Space Flight Center in Greenbelt, Maryland. NASA’s Heliophysics Division manages the sounding-rocket program for the agency.

[www.nasa.gov/soundingrockets](http://www.nasa.gov/soundingrockets)

THESE SOUNDING ROCKET CONFIGURATIONS WILL BE USED FOR THE FOUR LAUNCHES



# Super Soaker

three rockets

**LAUNCH WINDOW:**  
January 15 – 31, 2018

**LAUNCH TIME:**  
5 – 8 a.m. AKST  
All 3 rockets launched within  
a 32 minute period

**LAUNCH VEHICLES:**  
NASA Terrier-Improved Orion  
1st stage: Terrier  
2nd stage: Improved Orion

**VEHICLE LENGTHS:**  
Vehicles 1 and 3: 36 feet  
Vehicle 2: 34.5 feet

**APOGEEs:**  
Vehicles 1 and 3: 100 miles altitude  
reached in about 3.3 minutes  
Vehicle 2: 61 miles altitude  
reached in about 2.6 minutes

**TOTAL FLIGHT TIMES:**  
Vehicles 1 and 3: 7 minutes  
Vehicle 2: 5.5 minutes

**PRINCIPAL INVESTIGATOR:**  
Irfan Azeem  
Atmospheric & Space Technology  
Research Assoc.  
Boulder, Colorado

**MISSION:**  
“Super Soaker is a sounding rocket experiment designed to determine how large quantities of water could affect the upper atmosphere and form Polar Mesospheric Clouds (PMCs). Water vapor is a common exhaust product of space traffic. Super Soaker will fly to the upper atmosphere carrying about 50 gallons of water, about the amount in a bathtub. We will release the water canister at about 53 miles, dispersing and vaporizing the water. We will measure the basic state of the upper atmosphere before, during and after the release to determine the impact. These measurements include temperature, winds and high-altitude layers of ice particles known as PMCs.”

– Irfan Azeem



A Super Soaker payload is tested for its ability to operate while experiencing vibrations during flight.



One of the three Super Soaker payloads undergoes spin/balance testing in the Sounding Rocket Payload Processing Facility at NASA's Wallops Flight Facility.

# Diffuse X-Rays from the Local Galaxy (DXL)

**LAUNCH WINDOW:**  
January 15 – 31, 2018

**LAUNCH TIME:**  
2 – 5 a.m. AKST

**LAUNCH VEHICLE:**  
NASA Black Brant IX  
1st stage: Terrier  
2nd stage: Black Brant

**VEHICLE LENGTH:**  
57 feet

**APOGEE:**  
143 miles in about 4 minutes

**TOTAL FLIGHT TIME:**  
About 16 minutes

**PRINCIPAL INVESTIGATOR:**  
Massimiliano Galeazzi  
University of Miami, Florida

**MISSION:**  
“Very low energy diffuse X-rays from space are believed to come from two sources. The first source is located outside our solar system and is generated by remnants of multiple supernovae explosions forming what is now called the Local Hot Bubble region of our galaxy. The second source is within the solar system and is generated by the solar wind charge exchange. DXL seeks to gain a better understanding of the nature and characteristics of these sources.”  
– Massimiliano Galeazzi



Credit: Berit Bland

Personnel at the Wallops Flight Facility test the DXL payload's ability to connect with the Global Positioning Satellite (GPS) network which will be used to determine the location of the payload during flight.



Credit: Berit Bland

The DXL payload is assembled at NASA's Wallops Flight Facility in Virginia prior to its shipment to the Poker Flat Research Range in Alaska.



For more information, please visit our web site:  
**[www.nasa.gov/soundingrockets](http://www.nasa.gov/soundingrockets)**